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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,366	03/04/2002	Gary Lock	5624	8079
6858	7590	05/06/2004	EXAMINER	
BREINER & BREINER 115 NORTH HENRY STREET P. O. BOX 19290 ALEXANDRIA, VA 22314			DIAMOND, ALAN D	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/031,366

Applicant(s)

LOCK ET AL.

Examiner

Alan Diamond

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-12, 15 and 17-26 is/are rejected.
- 7) ☒ Claim(s) 4-6, 13, 14 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: reference sign 54, which is mentioned at page 22, line 31. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:
 - On page 6, at line 3, a brief description of Figure 1 is missing.
 - On page 6, at line 20, the term "Figure 7 illustrates" should be changed to "Figures 7A and 7B illustrate".
 - On page 22, at line 1, the "I" should be changed to "i" so as to be consistent with Figure 8.
 - On page 22, at lines 27 and 36, the "E" should be changed to "e".
 - On page 22, at line 28 and 37, the "P" should be changed to "p".Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 7, 8, 10, 18, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Tai et al, WO 99/17883. Tai et al teaches the instant dielectrophoretic cell and dielectrophoretic method wherein the electrodes have a zigzag sinusoidal shape, as here claimed (see Figure 3B; page 7, lines 10-15; and page 14, lines 15-29). Since Tai et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

6. Claims 1, 15, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Pethig et al, WO 98/04355. Pethig et al teaches the instant dielectrophoretic cell and dielectrophoretic method wherein the electrodes have deflections from the notional central axis as here claimed (see Figures 2, 3, and 5; and claims 1, 2, 6, 8, and 9). Since Pethig et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

7. Claims 1, 15, and 18-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Talary et al, "Electromanipulation and separation of cells using traveling electric fields," J. Phys. D. Appl. Phys., Vol. 29, pages 2198-2203, (1996). Talary et al teaches the instant dielectrophoretic cell and dielectrophoretic method wherein the electrodes have deflections from the notional central axis as here claimed (see Figure 1, and

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pages 2198-2199). Since Talary et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

8. Claims 1, 10-12, 15, and 18-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Becker et al, U.S. Patent 5,858,192. Becker et al teaches the instant dielectrophoretic cell and dielectrophoretic method wherein the electrodes have deflections from the notional central axis as here claimed (see Figures 5A, 5B, 6A, 6B, 7A, and 7B; and col. 3, line 28 through col. 14, line 12). Since Becker et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

9. Claims 1, 7-10, 15, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Pethig et al, WO 97/34689. Pethig et al teaches the instant dielectrophoretic cell and dielectrophoretic method wherein the electrodes have deflections from the notional central axis as here claimed (see Figure 3; and page 10, lines 1-10; and claims 1, 5, and 6). Since Pethig et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-3, 7-10, 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tai et al, WO 99/17883.

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Tai et al teaches the instant dielectrophoretic cell and dielectrophoretic method wherein the electrodes have a zigzag sinusoidal shape, as here claimed (see Figure 3B; page 7, lines 10-15; and page 14, lines 15-29). Tai et al teaches the limitations of the instant claims other than the difference which is discussed below.

Tai et al does not specifically teach, for example, selecting a frequency for its electrical signals to cause a negative dielectrophoretic response in a selected particle type in a suspension and providing means to cause the liquid suspension to flow across the electrode array, the initial steps recited in claims 22 and 23, or the concentrations differing by a factor of at least 1000. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided these features so as to perform the dielectrophoresis.

12. Claims 1, 15, and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pethig et al, WO 98/04355.

Pethig et al teaches the instant dielectrophoretic cell and dielectrophoretic method wherein the electrodes have deflections from the notional central axis as here claimed (see Figures 2, 3, and 5; and claims 1, 2, 6, 8, and 9). Pethig et al teaches the limitations of the instant claims other than the difference which is discussed below.

Pethig et al does not specifically teach, for example, selecting a frequency for its electrical signals to cause a negative dielectrophoretic response in a selected particle type in a suspension and providing means to cause the liquid suspension to flow across the electrode array, the initial steps recited in claims 22 and 23, or the concentrations differing by a factor of at least 1000. However, it would have been obvious to one of

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ordinary skill in the art at the time the invention was made to have provided these features so as to perform the dielectrophoresis.

13. Claims 1, 15, and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Talary et al, "Electromanipulation and separation of cells using traveling electric fields," J. Phys. D. Appl. Phys., Vol. 29, pages 2198-2203, (1996).

Talary et al teaches the instant dielectrophoretic cell and dielectrophoretic method wherein the electrodes have deflections from the notional central axis as here claimed (see Figure 1, and pages 2198-2199). Talary et al teaches the limitations of the instant claims other than the difference which is discussed below.

Talary et al does not specifically teach, for example, the initial steps recited in claims 22 and 23, or the concentrations differing by a factor of at least 1000. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided these features so as to perform the dielectrophoresis.

14. Claims 1, 10-12, 15, and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becker et al, U.S. Patent 5,858,192.

Becker et al teaches the instant dielectrophoretic cell and dielectrophoretic method wherein the electrodes have deflections from the notional central axis as here claimed (see Figures 5A, 5B, 6A, 6B, 7A, and 7B; and col. 3, line 28 through col. 14, line 12). Becker et al teaches the limitations of the instant claims other than the difference which is discussed below.

Becker et al does not specifically teach, for example, a concentration of suspension of particles is greater than one million cells per milliliter, as per claim 26.

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However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a concentration of suspension of particles greater than one million cells per milliliter so as to separate the cell using Becker et al's apparatus. Becker et al's apparatus can discriminate cells at a rate of between about 1000 and 3 million cells per second (see col. 15, lines 18-21).

15. Claims 1, 7-10, 15, and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pethig et al, WO 97/34689. Pethig et al teaches the instant dielectrophoretic cell and dielectrophoretic method wherein the electrodes have deflections from the notional central axis as here claimed (see Figure 3; and page 10, lines 1-10; and claims 1, 5, and 6). Pethig et al teaches the limitations of the instant claims other than the difference which is discussed below.

Pethig et al does not specifically teach, for example, selecting a frequency for its electrical signals to cause a negative dielectrophoretic response in a selected particle type in a suspension and providing means to cause the liquid suspension to flow across the electrode array, the initial steps recited in claims 22 and 23, or the concentrations differing by a factor of at least 1000. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided these features so as to perform the dielectrophoresis.

Allowable Subject Matter

16. Claims 4-6, 13, 14, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 5,795,457 and U.S. Patent Application Publication 2001/0047941 are hereby made of record.


18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
April 30, 2004

A handwritten signature in black ink, appearing to read 'Alan Diamond', is written over the printed name and title.